

Docket No. 242438US3

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Masao MURAKAMI, et al.

SERIAL NO: NEW APPLICATION

GAU:

FILED: HEREWITH

EXAMINER:

FOR: HEAT EXCHANGE SYSTEM AND ROTOR HAVING THE SAME

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

**REFERENCES**

- ☒ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

**RELATED CASES**

- ☐ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the patent(s), together with a copy of the claims and drawings of the pending application(s) is attached along with PTO 1449.
- ☐ A check is attached in the amount required under 37 CFR §1.17(p).

**CERTIFICATION**

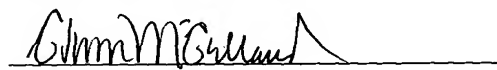
- ☐ Each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

**DEPOSIT ACCOUNT**

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment form is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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SERIAL NO.: New Application

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FOR: HEAT EXCHANGE SYSTEM AND ROTOR HAVING THE SAME

**STATEMENT OF RELEVANCY**

**Reference AO (5-104262) on Form PTO-1449:**

explained in the specification

**PURPOSE:**To restrain the expansion of a center part of the width of a roll by arranging cooling water passages in the inner part of the roll and cooling with gas-liquid two phases.

**CONSTITUTION:**Plural cylindrical hollow parts 41 for heating medium having length to almost the whole width of the roll are arranged at near the surface of the roll 40 and the water as the heating medium 42 is filled and sealed. On the other hand, in the center part of the roll 40, the hollow part 43 for water cooling is arranged and by a rotary joint 44, supply/discharge of the cooling water is executed. The inner parts of the hollow parts 41 for heating medium come to upside or downside, but the gas phase and the liquid phase always coexist and the uniform heating of the roll can be obtained.

**Reference AP (5-261725) on Form PTO-1449:**

explained in the specification

**PURPOSE:**To lower a rise in the surface temperature of a rotor shaft and prevent the stickiness of a kneading material by carving a groove in the outer periphery of the main body of the rotor shaft and fitting a sleeve to the outer periphery of the main body to form a fluid passage by both of them and allowing the terminal of the fluid passage to communicate with the fluid introducing part and fluid lead-out port provided to one end of the rotor shaft to form a cooling water reflux passage.

**CONSTITUTION:**A fluid passage 26 is formed by the spiral groove carved in the outer periphery of the rotor shaft main body 13 in a container 11 and the sleeve fitted to the outer periphery of the main body 13 and blades 18A, 18B are welded to the sleeve. The forward passage 19 and return passage 20 of a cooling water passage are provided to the axial core part from the rotary joint 17 provided to the end of a rotor shaft to the interior of the container 11 and the communication hole 23 from the forward passage 19 to the fluid passage 21 in the blade is provided. Further, a cooling water reflux passage is formed by the communication hole 27 returning to the return passage 20 from the communicating hole 24 piercing the rotor shaft 13 through the passage 22 in the blade, a communication hole 25 and the passage 26. Therefore, the surface of the rotor shaft 13 and the blades 18A, 18B are efficiently cooled to prevent the stickiness of kneaded matter.

**Reference AO (9-2771452) on Form PTO-1449:**

explained in the specification

**PROBLEM TO BE SOLVED:** To reuse a hot rolling roll with accuracy similar to the case of a brand new roll by grinding the roll with the internal space thereof cooled using a heat medium having lower temperature than raised temperature under the application of external heat to the roll.

**SOLUTION:** The surface of a roll 1 is externally heated. This heating temperature differs, depending on a hot rolling condition, namely, an applicable resin type, production volume or the like. In general, however, the heating temperature is taken at a level approximately between 150 °C and 250 °C. Then, the surface of the roll 1 is cooled, using a heat medium running in a flow passage 3. In this case, the heat medium is used at temperature lower than raised temperature. A polyvinyl chloride resin, polystyrene resin, polypropylene resin, polyethylene resin or the like is mentioned as an applicable resin type. The hot rolling roll is polished in this cooled state.

Form PTO 1449 (Modified)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY DOCKET NO. <b>242438US3</b>		SERIAL NO. <b>NEW APPLICATION</b>	
LIST OF REFERENCES CITED BY APPLICANT				APPLICANT <b>Masao MURAKAMI, et al.</b>			
				FILING DATE <b>HEREWITH</b>		GROUP	
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						
<b>FOREIGN PATENT DOCUMENTS</b>							
		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES      NO		
	AO	5-104262	04/27/93	Japan			X
	AP	5-261725	10/12/93	Japan			X
	AQ	9-277145	10/28/97	Japan			X
	AR						
	AS						
	AT						
	AU						
	AV						
<b>OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)</b>							
	AW						
	AX						
	AY						
	AZ					<input type="checkbox"/> Additional References sheet(s) attached	
Examiner					Date Considered		
*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							